

**CLAIMS**

What is claimed is:

- 5     1. A device for allowing a user to deploy a stent in an anatomical lumen of a patient, the stent deployment device comprising:
- a stabilizing member;
- 10           a longitudinally extending outer tubular member having distal and proximal ends;
- a longitudinally extending inner tubular member having distal and proximal ends, the distal end of the inner tubular member comprising a tip, the inner tubular member coupled with the stabilizing member and at least a portion of the inner
- 15           tubular member disposed within the outer tubular member such that the inner tubular member is longitudinally and axially displaceable relative to the outer tubular member; and
- a deployment mechanism coupled with the outer tubular member, the deployment
- 20           mechanism comprising a release member for longitudinally moving the outer tubular member relative to the inner tubular member.
2. The stent deployment device as recited in claim 1, wherein the deployment mechanism further comprises a second release member operably connected to the first release member
- 25           for moving the first release member and the outer tubular member in a direction toward the stabilizing member from a first position of the outer tubular member relative to the inner tubular member to a second position of the outer tubular member relative to the inner tubular member.

3. The stent deployment device as recited in claim 2, wherein the first release member is movable relative to the second release member for moving the first release member and the outer tubular member in a direction toward the stabilizing member from the second position of the outer tubular member relative to the inner tubular member to a third position of the  
5 outer tubular member relative to the inner tubular member.

4. The stent deployment device as recited in claim 1, further comprising a safety member for preventing movement of the release member and the outer tubular member toward the stabilizing member beyond a predetermined position of the outer tubular member relative to  
10 the inner tubular member.

5. The stent deployment device as recited in claim 4, wherein movement of the release member from a first position of the outer tubular member relative to the inner tubular member to the predetermined position is adapted to expose at least a portion of the stent.  
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6. The stent deployment device as recited in claim 5, wherein the portion of the stent exposed is from about 5% to about 95 % of the length of the stent.

7. The stent deployment device as recited in claim 4, wherein the safety member comprises  
20 a removable tab disposed between the stabilizing member and the outer tubular member.

8. The stent deployment device as recited in claim 1, further comprising an elongated viewing device having a proximal end and distal end, the viewing device slidably disposed in the outer tubular member such that the proximal end of the viewing device extends  
25 outwardly of the proximal end of the outer tubular member.

9. The stent deployment device as recited in claim 8, further comprising means for releasably securing the viewing device with respect to the outer tubular member.

10. The stent deployment device as recited in claim 9, wherein the viewing device securing means is associated with the stabilizing member.

11. The stent deployment device as recited in claim 9, wherein the viewing device securing  
5 means is associated with the stabilizing member.

12. The stent deployment device as recited in claim 11, wherein the viewing device securing means comprises a clamp thread ably receiving in the stabilizing member.

10 13. A stent delivery system for use in an anatomical lumen of a patient, the stent delivery system comprising:

a stabilizing member;

15 a longitudinally extending outer tubular member having distal and proximal ends;

a longitudinally extending inner tubular member having distal and proximal ends, the distal end of the inner tubular member comprising a tip, the inner tubular member coupled with the stabilizing member and at least a portion of the inner  
20 tubular member disposed within the outer tubular member such that the inner tubular member is longitudinally and axially displaceable relative to the outer tubular member;

a stent having a proximal end and a distal end and slidably disposed in the outer  
25 tubular member; and

a deployment mechanism coupled with the outer tubular member, the deployment mechanism comprising a release member for longitudinally moving the outer tubular

member in a direction toward the stabilizing member relative to the inner tubular member,

wherein the tip of the inner tubular member engages the proximal end of the stent for  
5 advancing the stent toward the distal end of the outer tubular member as the release member moves toward the stabilizing member.

14. The stent delivery system as recited in claim 13, wherein the deployment mechanism further comprises a second release member operably connected to the first release member  
10 for moving the first release member and the outer tubular member in a direction toward the stabilizing member from a first position of the outer tubular member relative to the inner tubular member to a second position of the outer tubular member relative to the inner tubular member, wherein a portion of the stent is exposed outwardly of the distal end of the outer tubular member.

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15. The stent delivery system as recited in claim 14, wherein the first release member is movable relative to the second release member for moving the first release member and the outer tubular member in a direction toward the stabilizing member from the second position of the outer tubular member relative to the inner tubular member to a third position of the  
20 outer tubular member relative to the inner tubular member for deploying the stent from the distal end of the outer tubular member.

16. The stent delivery system as recited in claim 13, further comprising a safety member for preventing movement of the release member and the outer tubular member toward the  
25 stabilizing member beyond a predetermined position of the outer tubular member relative to the inner tubular member.

17. The stent delivery system as recited in claim 16, wherein movement of the release member from a first position of the outer tubular member relative to the inner tubular

member to the predetermined position exposes at least a portion of the stent outwardly of the distal end of the outer tubular member.

18. The stent delivery system as recited in claim 17, wherein the portion of the stent  
5 exposed is from about 5% to about 95 % of the length of the stent.

19. The stent delivery system as recited in claim 16, wherein the safety member comprises a removable tab disposed between the stabilizing member and the outer tubular member.

10 20. The stent delivery system as recited in claim 1, further comprising an elongated viewing device having a proximal end and distal end, the viewing device slidably disposed in the outer tubular member such that the proximal end of the viewing device extends outwardly of the proximal end of the outer tubular member.

15 21. The stent delivery system as recited in claim 20, further comprising means for releasably securing the viewing device with respect to the outer tubular member.

22. The stent delivery system as recited in claim 21, wherein the viewing device securing means is associated with the stabilizing member.

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23. The stent deployment device as recited in claim 21, wherein the viewing device securing means is associated with the stabilizing member.

24. The stent deployment device as recited in claim 23, wherein the viewing device  
25 securing means comprises a clamp thread ably receiving in the stabilizing member.

25. A method for delivering a stent in an anatomical lumen of a patient, the method of stent delivery comprising the steps of:

providing a delivery device including a stabilizing member, a longitudinally extending outer tubular member having distal and proximal ends, a longitudinally extending inner tubular member having distal and proximal ends, the distal end of the inner tubular member comprising a tip, the inner tubular member coupled with the stabilizing member and at least a portion of the inner tubular member disposed within the outer tubular member such that the inner tubular member is longitudinally and axially displaceable relative to the outer tubular member, and a deployment mechanism coupled with the outer tubular member, the deployment mechanism comprising a release member for longitudinally moving the outer tubular member relative to the inner tubular member;

slidably disposing a stent having a proximal end and a distal end in the outer tubular member; and

advancing the release member and the outer tubular member relative to the inner tubular member in a direction toward the stabilizing member;

wherein the tip of the inner tubular member engages the proximal end of the stent for advancing the stent toward the distal end of the outer tubular member as the release member moves toward the stabilizing member.

26. The method of stent delivery as recited in claim 25, further comprising the steps of providing a second release member movably connected to the first release member, and advancing the second release member in a direction toward the stabilizing member from a first position of the outer tubular member relative to the inner tubular member to a second position of the outer tubular member relative to the inner tubular member, wherein a portion of the stent is exposed outwardly of the distal end of the outer tubular member.

27. The method of stent delivery as recited in claim 26, further comprising the step of advancing the first release member and the outer tubular member in a direction toward the

stabilizing member from the second position of the outer tubular member relative to the inner tubular member to a third position of the outer tubular member relative to the inner tubular member for deploying the stent from the distal end of the outer tubular member.

- 5 28. The method of stent delivery as recited in claim 25, further comprising the step of preventing movement of the release member and the outer tubular member toward the stabilizing member beyond a predetermined position of the outer tubular member relative to the inner tubular member.
- 10 29. The method of stent delivery as recited in claim 25, further comprising the steps of providing an elongated viewing device having a proximal end and distal end, and slidably disposing the viewing device in the outer tubular member such that the proximal end of the viewing device extends outwardly of the proximal end of the outer tubular member.
- 15 30. The stent delivery system as recited in claim 29, further comprising the step of releasably securing the viewing device with respect to the outer tubular member.